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The Official Publication of the AUGI Design Community

June 2022

# Implementing Best Strategies

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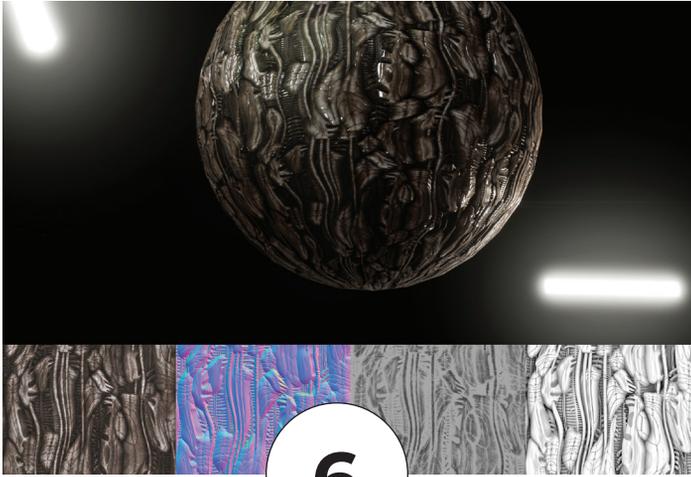
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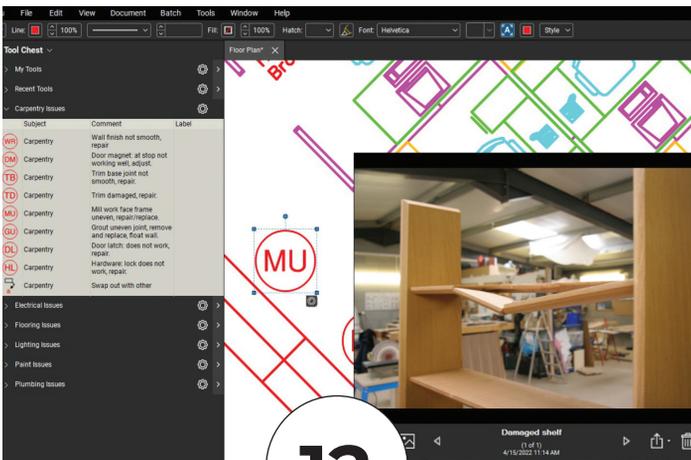
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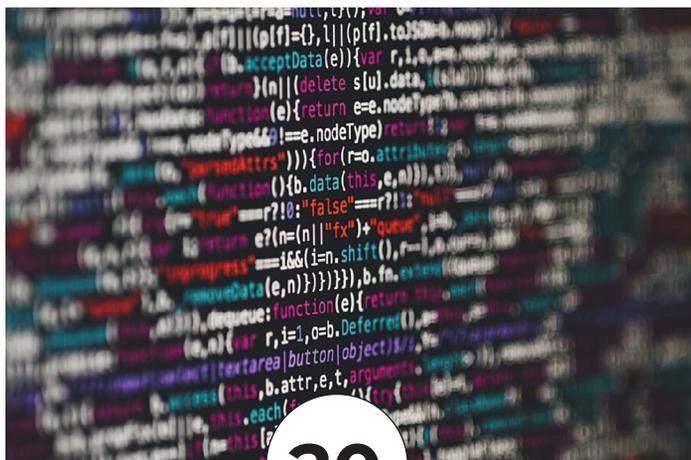
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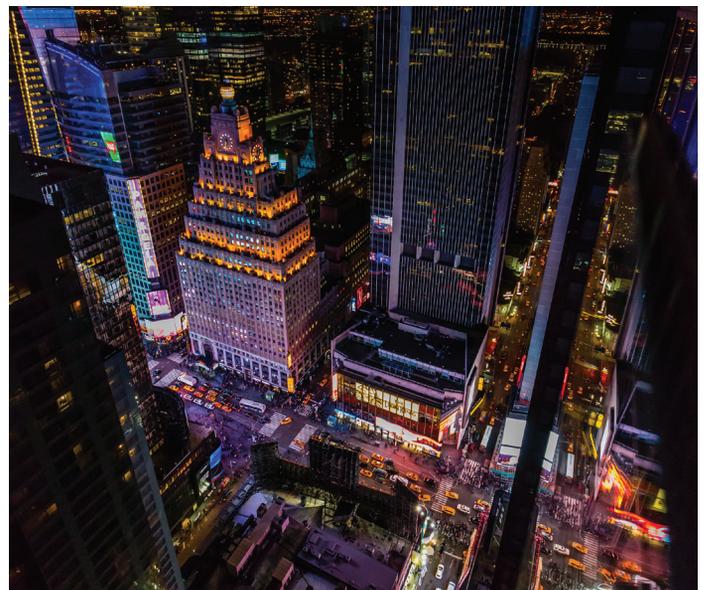
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## From the President



**T**o accomplish great things, we must not only act, but also dream; not only plan, but also believe.” (*Anatole France*)

In my Autodesk University handouts, I used to end with, “Knowledge is Power”. Not that I disagree with myself, but what is power is implementing what you’ve learned! Those AU handouts have all the right tools for

implementing what I was teaching, which ultimately was my intention.

This is how I see that we can implement change:

- Know what the goal is and what benefits the goal will bring
- Make a plan to obtain the goal
- Break down the plan into small tasks
- Examine possible disruptions to completing the goal
- Set a timeline to complete each task and be realistic

For larger projects that require multiple resources, have someone act as a project manager to keep everyone on task (this can be useful for smaller projects as well)

I will admit that I am not good at project management, yes, I just said that! It’s not in my skill set. I know what needs to be done, but I get wrapped up in the technical delivery of what I need to do and lose track of everything else. So, for me, I like having someone who is assigned to keep me on track.

I’m a big believer that we all are unique in our talents and skills. We all have a place where we can contribute. I believe we were designed that way so that we would find benefit in working together to solve problems and be able to implement change in a more effective way.

I hope you all enjoy our focus this month on implementation, which is undeniably, very powerful!

Sincerely,

KaDe

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#### Copy Editor

Isabella Andresen - [isabella.andresen@augi.com](mailto:isabella.andresen@augi.com)

#### Layout Editor

Tim Varnau - [tim.varnau@augi.com](mailto:tim.varnau@augi.com)

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# Implementing Best Practices for Large Scenes

**W**ith planning, we can implement some steps to improve our experience with 3ds Max, especially concerning large scenes.

First, let's discuss bevels. Bevels are one of the essential factors in visualization. The bevels serve to highlight edges when rendered. That is almost a singular purpose. We can adjust these bevels to display imperfections and bring life to our scenes as artists. Nothing screams computer-generated as objects with perfect edges and by pushing and pulling vertices around on these beveled edges. However, this custom editing of beveled edges to create ultra-realistic visualization isn't necessary in many cases. They also become time-consuming to implement and adjust. However, this doesn't mean we have to exclude beveled content entirely. An excellent trick to implement is applying trim sheets to everyone, from rails to walls.

Essentially, the process is a little more advanced to understand but easy to implement. All you need is a standard map with beveled edges already

implemented. Then, when mapping the faces of a rail or fence, you ensure the edges of those rails and fences align with the beveled edges on the normal map. While this won't physically bevel your objects (of course), the normal map helps to fake the

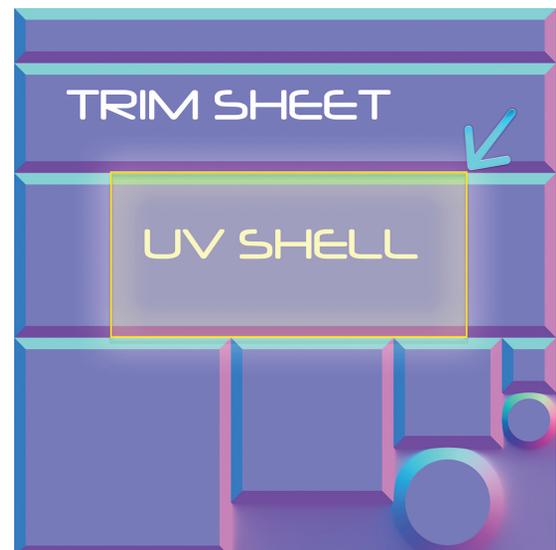


Figure 1 – Trim Sheets

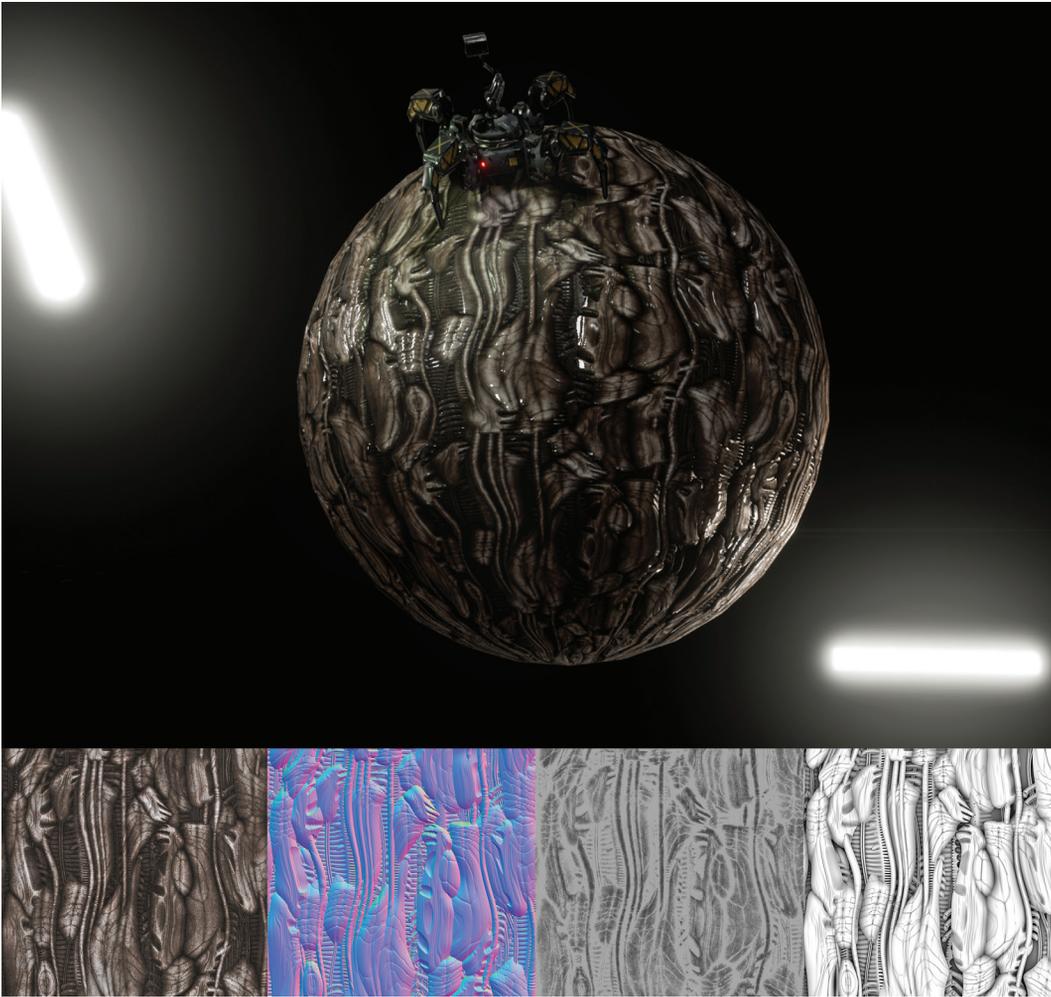


Figure 2 – Sample Texture Detail

highlighting necessary for higher-quality rendering quickly. See Figure 1. By overlaying the edges of the UV Shell with the trim sheet, the bevels are artificially added. That is also a highly optimized method. Using a single trim sheet to apply bevels to many elements reduces the texture calls from rendering software (one of the more demanding processes in rendering pipelines).

Next, let's discuss the modifier stack. Collapsing the stack can be significant. In many cases, once certain modifications and steps are taken, there becomes a point of no return, where it's simpler to rebuild an object than figure out where it can be modified in the stack without breaking the entire model. At this point, the modifier stack is just information/recorded history. Collapsing them can speed up scenes exponentially. It's not rare to have 27,000 objects in a scene. When you have 27,000 objects with modifiers applied to them, 3ds Max becomes virtually unusable. A single selection can

take several minutes. Think very hard about maintaining stacks when you don't need them. Collapsing the stack is essentially the same as erasing unnecessary history that slows files and work down.

Last, let's discuss when to model and when not to model. I recently ran into a case where the hexagonal content on a rubber carpet floor was modeled. This generated several hundred thousand polygons for an object that mattered little in the overall scheme of things. There's a myth that high quality means a high number of polygons. Most of the time that isn't the case. Some of the highest detailed content can be generated with minimal polygons. Generally, you want to apply modifications to edges to achieve the edge

quality and silhouette of a form to generate realism. However, normal maps will produce more than a satisfactory result for many details. Textures alone can present considerable detail. So, think twice the next time you think you need 750,000 polygons to create that realistic model of a gaming chair. You can likely generate with 5,000 or less. Let's all work smarter, not harder!



*Brian Chapman is a 3D Artist located in Las Vegas with an extensive history of building 3D content for AEC, game, film, and software development. In addition to 3D art, Brian has experience with graphic arts and software development. Brian can be reached [procadman@pro-cad.net](mailto:procadman@pro-cad.net)*

# Do It or Delegate It



**W**ay back when, I read a book called “Getting Things Done: The Art of Stress-Free Productivity” by Paul Allen. His book helped me to get control of the overwhelming number of tasks that have to be done by a Tech Manager in a day/week/month. It is a quick and easy read with a ton of practical ideas for wading through your assignments, requests, to-do’s and more.

One area of his book covers deciding what to work on when things come your way. He has a mantra – Do it. Delegate it. Defer it. Delete it. You can decide which to do by asking yourself a few questions for each item that falls in your lap. “Will this take less than two minutes?” You can expand his timeline (and I do) to be around 10-15 minutes since you are in a support role and the person who gave you the task thinks it is pretty important. Let’s say the answer

is, “yes,” and it won’t take that long to get the thing done, then you go to option one.

## DO IT

I have found that just doing the task when it comes up gets it done and off your plate, rather than postponing and coming back to it. If it will take longer than 10 minutes, then you may want to cascade down the list of options. I may be busy, but as a support person, I need to be interruptible at all times. When someone needs something done, I should hop to it. Just get out of your chair and go help. Make a note of what you were working on or mark a place you can return to and then take care of the immediate need.

If it is a task that you need to do for your own benefit and not something others have given you, then doing it now will clear your plate for other things. As



things come in and you ask the “2 minute” question, you need to just get the quick ones done and off the list.

Before we move on to option 2, let’s review the use of the “2 minute” question. You should only ask it once. Back in the paper days, it used to be “touch it only once”. Now the “touch” may be digital, like emails, website links, attached PDFs or whatever. It still applies... process items only once, decide what to do and move in the direction of your decision. Don’t push off an item and come back later to ask the question or make the decision. Define it once and move ahead. If the answer is yes – get it done. If the answer is no, then decide what to do next, but do not set it aside without deciding. Don’t procrastinate, you will only take up more of your valuable time.

## DELEGATE IT

If the answer is, “no,” and it will take much longer than 2, 5, 10 or 15 minutes. Well then, you need to look at the next option in Paul Allen’s book – *Delegating*.

I have mentioned delegating in many articles over the years. Most recently, back in July of 2020, when I wrote an article for *AUGI WORLD* called “The Overwhelmed Tech Manager - Too Busy to Get Anything Done” which talked about the avalanche of demands on your time.

In that article, I mentioned delegating and that you need to learn to give your tasks away and said “Maybe it is time to sharpen your delegation skills. You don’t have to do it all yourself. Even if you are the only one who gets paid to support CAD/BIM, others can help out. And many are willing and eager to help. Tech is exciting for a lot of people you work with. They would love to assist in an area that you trust them with.”

Delegating is something that you have to discipline yourself to do. Why would you give away work? Isn’t that what keeps you employed? But as your firm grows and your workload grows, you will not be able to do it all yourself. I understand that staffing limitation can make it impossible to give things away and some things will just “not get done”. That is the reality of smaller firms have to deal with. And the big boss needs to define when you can bring on other staff to help you get things done. I am going to assume that you can give some of your tasks to others and have people that can help, either direct reports or others. If you have no one, then there is a staffing conversation that needs to happen. That may fit in another article, but not this one.

Let’s assume that there is someone that can take on some of your tasks... but should they? Will they do a good job? What do you give them? What do you keep for yourself?

## WHAT TO GIVE AWAY

When you think about it, giving away work does several good things. It frees your time and it empowers, educates and nurtures others. It also gets things done that may languish if they had to wait for your time to free up.

But delegating is not easy. Many things can make it hard to pass work on to others. From the concept



of “it’s my job,” to “no one can get this done right but me,” the excuses for not giving things away can derail efforts to expand the “done” list by having others help. Don’t forget that you get paid to get things done and keep things running. You are usually not paid for completing one task or another from a list, but for generating outcomes that move your teams forward. What better way to move things forward than to have others chip in. You need to fight the desire of just doing it yourself. Your list is too long and your backlog is delaying progress.

But what do you give away? Ask this..., “Am I be best person to get this done right now?” If you need more incentive to pass something off to another person, ask this..., “I can’t do this right now, who can I give it to?”. Or even this..., “Why does this have to be done by me?”

Sometimes, others can do things better or faster than you. Admit it – you are not the best at everything. There are others who can knock out some of your tasks just as good or better than you. You probably already know who they are. And they may know it too. It is not a bad thing to have a collection of star players around you that love to help out. Let them do it.

## WHAT TO KEEP

**Keep the stuff that is pivotal to the firm and need extra** attention. If you pass on some of your tasks, then you will have more time to focus on the items that are critical to your firm’s future. Keep the

things that really match your pay grade. That may seem kind of tactless, but there are a lot of things that can be done by someone else in the firm that is not at the level that you are. I know, you might be the lowest person on the ladder, but still, some things are purely administrative and require no tech knowledge at all to get done. Don’t keep those.

Keep the ones that need your clout of title, knowledge, authority, whatever. Keep the ones that are politically charged and others might have a tough time navigating the opposition of others. Keep the ones that impact culture, like policy changes that have to be escorted down the road. Keep the tasks that are related to company mission or vision, large tech change items and relationship management issues with vendors, staff and other managers. Keep the items that need critical decisions that are still being worked out. Obviously, if you have staff under you, do not delegate hiring, onboarding, motivation, encouragement, discipline and terminations. That is what “managers” have to do. Keep them and give away others.

You should come up with some items to pass on to others. You can move from thinking about what to give away toward what to keep. If it is not on the keep list, give it away. Next time, we will finish up with delegating steps and practical processes. But start thinking about what you can take off your plate to make room for the things you need to be doing.

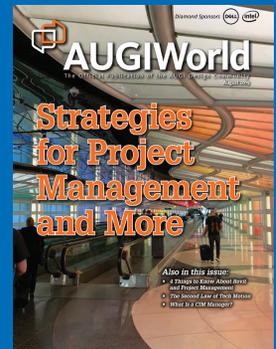
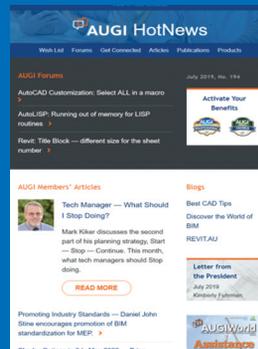


*Mark Kiker has more than 30 years of hands-on experience with technology. He is fully versed in every area of management from deployment planning, installation, and configuration to training and strategic planning. As an internationally known speaker and writer, he is a returning speaker at Autodesk University since 1996. Mark is currently serving as Chief Technology Officer for SIATech, a non-profit public charter high school focused on dropout recovery. He maintains two web sites, [www.caddmanager.com](http://www.caddmanager.com) and [www.bimmanager.com](http://www.bimmanager.com). He can be reached at [mark.kiker@augi.com](mailto:mark.kiker@augi.com) and would love to hear your questions, comments and perspectives.*

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# Automating Punch Lists with Bluebeam Revu

It would be a lovely world if everything we designed and built went perfectly the first time around, wouldn't it? Unfortunately, in the real world, that never happens. There are always missed items, broken items, things installed in the wrong location, even things that got damaged after they were correctly installed. These items are the bane of the construction process, but they need to be addressed before we can call the job complete and do final turnover to the client— you know, the person paying for all the work?

These issues that arise near the end of every construction project are unavoidable, no matter how good your crews are, or how diligent you are at keeping on top of the construction process. The best you can hope for is to be able to address them in a quick, efficient, and cost-effective manner. You can't ignore them, or you don't get paid, but if you spend days, even weeks, trying to identify,

communicate, respond to and assign responsibility to each of these items, you're going to lose the money you're supposed to get anyway. The key to handling these walk-thru or "punch list" items is to make them as simple to work with as possible. The ideal scenario is one where a punch issue is identified, assigned, accepted, approved, and resolved in a day instead of spending weeks trying to coordinate communications and discussions among all the involved parties. How many hours have you spent phoning, emailing, arranging meetings, arguing over who's responsible, then finally assigning the problem to that person and waiting for them to accept responsibility and see if the issue's been resolved? It's an endless cycle of frustration and lost income, but it doesn't have to be. With an intelligent construction tool, like Bluebeam Revu, you can automate the punch process and save thousands of dollars on every project.

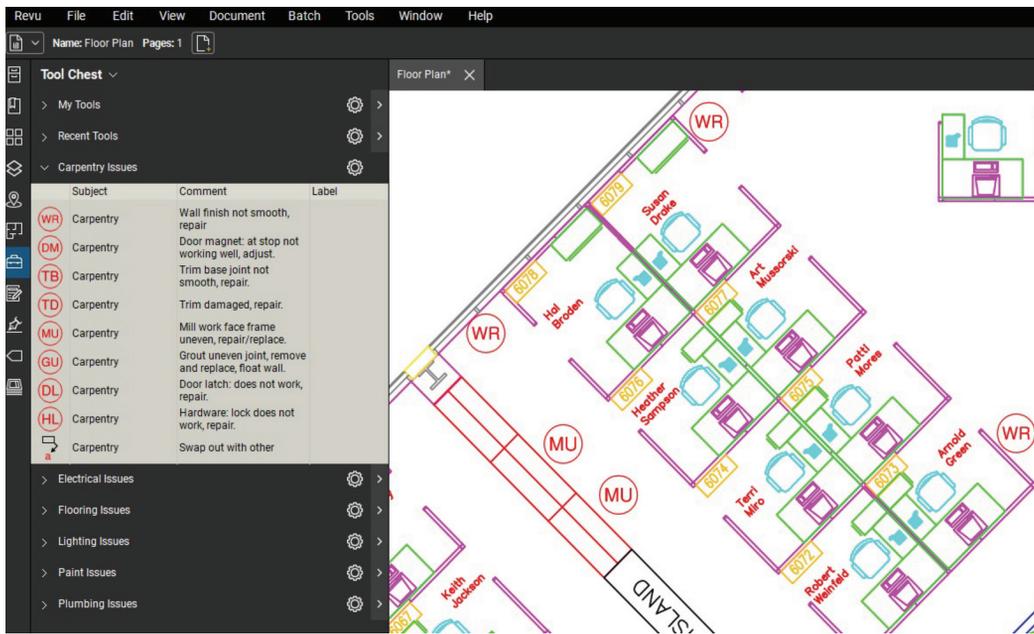


Figure 1: Punch Keys

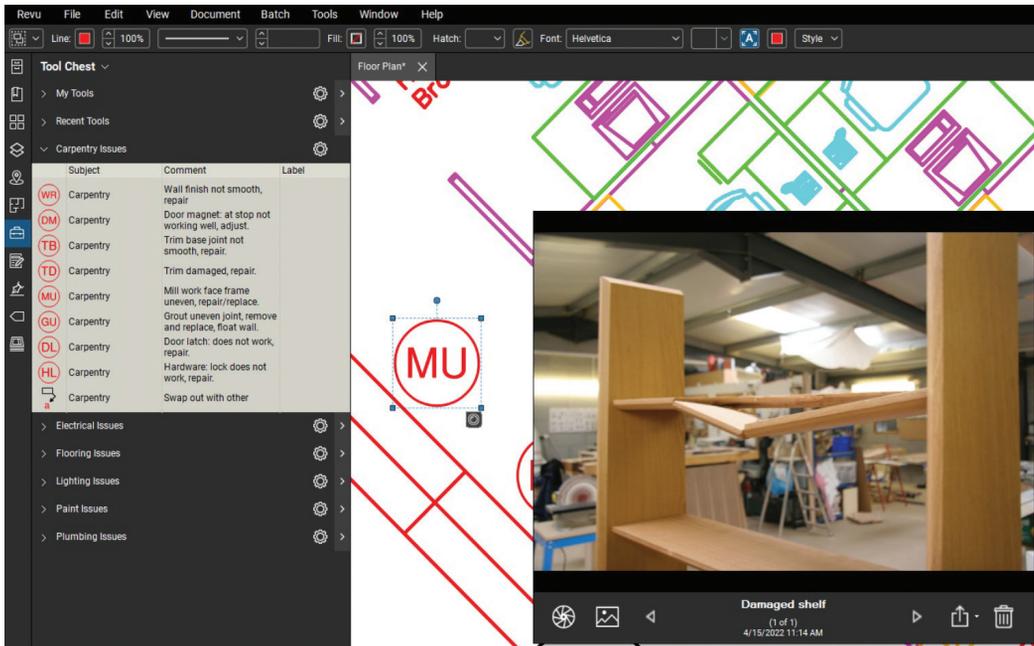


Figure 2: Add Images to Punch Keys

Bluebeam lets you build re-usable tool sets, with integrated data properties and hyperlinks to help automate the entire punch process from start to finish. Bluebeam even lets you use a single PDF to coordinate, communicate and even reply to and track the status of every punch item from a central cloud location that all stakeholders on the job can access and update in real time. Let me walk you thru the process, so you can see the benefits for yourself.

To start with, we create a series of tools in Bluebeam Revu, for our designated punch keys. These are

coded to common issues and can easily be modified to add specifics for each item. Bluebeam Revu ships with an example set of the “Punch Key” tools to get you started, but it’s very easy to copy those and/or build your own for the specific type of work you do. In Figure 1, you can see how easy it is to just click Punch Keys on the side panel and add them to your plans.

The best part is that all these tools can be accessed and used right in the field, on a tablet or 2-in-1 laptop. Using the built in Bluebeam Studio collaboration system, you can even see those items being added by field staff, in real time, from anywhere in the world. Imagine that: real-time responses to your issues! Another remarkable feature of the Revu Punch List system is that you can easily add photos directly to a punch key. Bluebeam has a built-in photo viewer that lets you add as many pictures as you need to each Punch Key, to accurately document exactly what the issue is (Figure 2).

You can also add hyperlinks to your punch keys, either manually or pre-formatted to the tool, that will launch other files and locations when clicked on. If you need to open a project punch report form or maybe, you work in a construction management system that has a page for tracking/reporting construction issues. It’s very easy to make the Punch Key “clickable” to launch those sites or files.

One of the most important features of the Bluebeam Revu punch list system is that it incorporates automatically with another Bluebeam

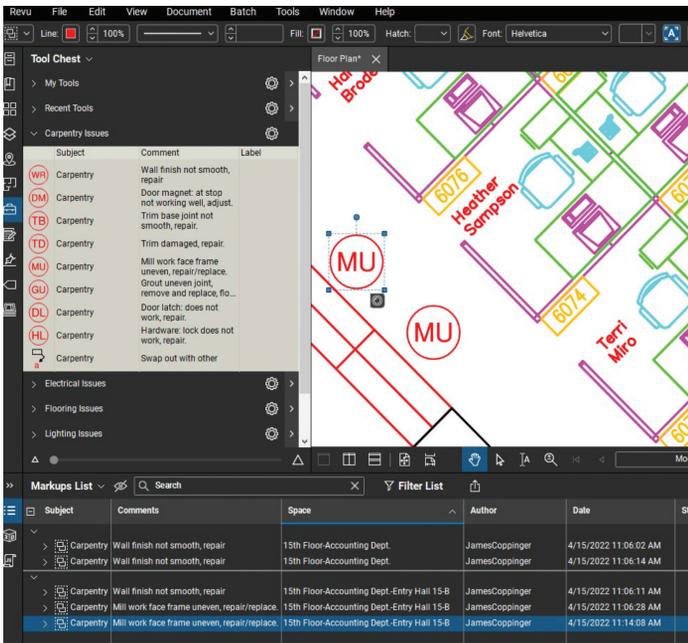


Figure 3: Punch Key in a Space

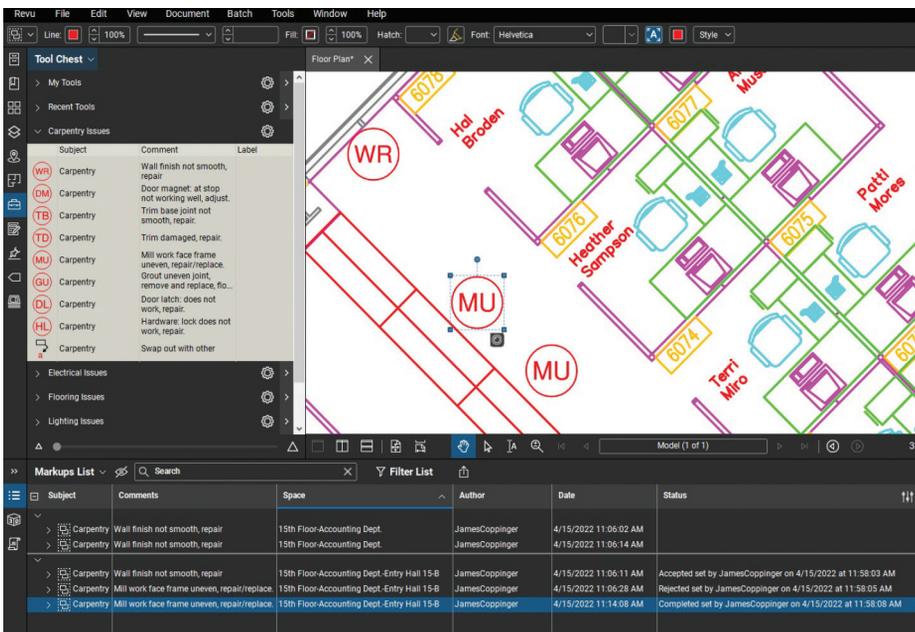


Figure 4 Punch Key Status

tool: Spaces. The Spaces feature lets you quickly identify and name all the rooms, zones, areas, phases, etc., on your project site. Once that's done (usually at start of project) whenever you add a Punch Key, Bluebeam automatically tells you exactly where that issue resides in the build. The Space will automatically display in the Bluebeam Markups List on the bottom of your screen, so there's no question about where the issue is on the site.

The last big item I want to talk about in the Bluebeam punch list arsenal is the ability to set and track the status of punch items. Bluebeam ships with a set of punch focused statuses that you can use, or you can build/customize on your own. These statuses let you keep track of who is responsible for a fix, what's been done on it so far and even who/when they set that status. This can remove a ton of time spent on calls and emails to find out what's going on. Responsible parties can just open the PDF, click the Punch Key, and select the appropriate status so everyone on the project can see where the issue stands. You can even sort/filter by status and generate reports off those filters so you can see what's been done, what's pending, and quickly reach out to people to remind them of items they need to address.

Bluebeam is used by over 80% of construction companies in the United States, so making use of

it as your primary punch list tool makes perfect sense. Everyone involved is likely to already have access to the tool and know how to use it. The other thing to keep in mind is that this process inside Bluebeam is fully customizable, so it can be adapted to meet almost any need or tracking requirement you might have. The punch list process in Bluebeam is one of the simplest, and most intuitive, on the market today and if you're involved with walk-thru/punch at any level it's worth your time looking into this tool set.



*Jim Coppinger is an owner at ZenTek Consultants, the nation's premiere technology consultant for the design/build world. Jim is also the host of The CADDle Call podcast, the leading broadcast on all things design and construction technology related.*

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# Collaborating Civilly: Horizontal Construction with Autodesk Collaboration for Civil 3D

One of the biggest advancements in the construction industry, especially in horizontal infrastructure design and construction, is the ability to seamlessly collaborate with internal and external stakeholders.

For the longest time, collaboration between field crews (data capture), civil design, architect, and contractor has been a very cumbersome and frustrating process. It typically consists of a lot of finger-pointing between disciplines and frustration amongst managers and owners, especially when projects reach the construction stages.

Architects and vertical contractors, however, have really embraced the collaborative environment and set the bar high. With the evolution of the cloud collaboration tools from Autodesk, like BIM Collaborate tools, the door has been opened for horizontal construction to adopt the same platform and take collaboration to the next level. See Figure 1.

As we see more and more people working away from the office, clean collaboration on a single platform has never been more important. So, what are some of the pain points we see today in our work environments?

- Companies need more flexibility for remote

The best solution out there for co-authoring in Revit, Civil 3D, & Plant 3D

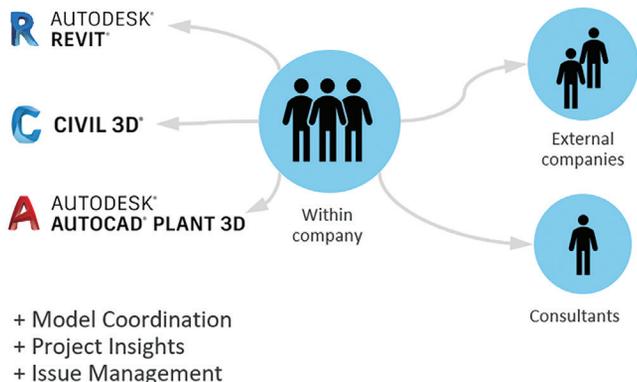


Figure 1

work now more than ever, using the design tools they know and love (Revit, Civil 3D, Plant 3D).

- Companies need fewer disconnected/nonintegrated apps and more streamlined data and workflow.
- Not all decision makers need to have authoring tools (Revit, Civil 3D, Plant 3D). They need to be able to manage design review and get input from important project contributors when it matters most, not when it's too late!

The ability to seamlessly co-author in real time, from anywhere, in an environment tailored to the Civil 3D workflow allows collaboration for Civil 3D to address these pain points via BIM Collaborate Pro.

SOFTWARE FOR THE WHOLE TEAM

BIM Collaborate Pro is ideal for teams that use more than one design authoring tool. Even if one team doesn't use workflows requiring a common data environment or more than one design tool, the extended project teams will. Being a part of digital project delivery means needing the ability to review and access files, comment, co-author, or carry out change orders. See Figure 2.

BIM Collaborate Pro enables infrastructure design professionals and extended project team stakeholders, whether within one firm or across multiple firms, to collaborate securely and store data on the Autodesk Construction Cloud platform for A/E/C projects.

These products include these key features for Civil 3D users:

- Autodesk Docs, the foundation of the Autodesk Construction Cloud platform. Even as a cloud-based, single source of truth data management platform, it connects easily to desktop environments with the Desktop Connector sync tool.

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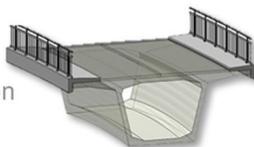
Collaboration for Civil 3D

- Civil 3D projects managed in the cloud
- Create & Consume Data Shortcuts
- Automated File Locking



Design Collaboration

- Set publishing
- Package review and distribution
- Visual version comparison
- Design issues



Model Coordination

- Automated clash detection
- Clash grouping
- Coordination issues

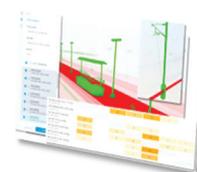


Figure 2

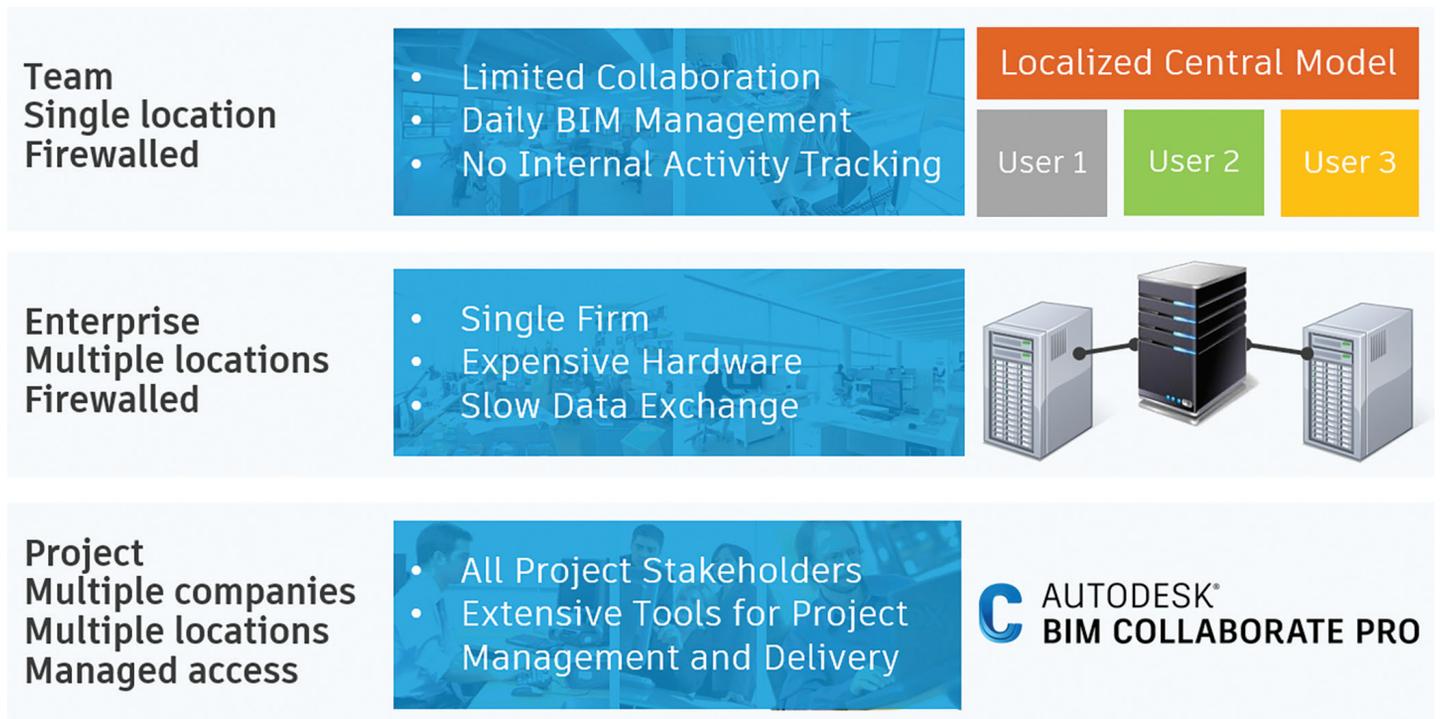


Figure 3

- The Design Collaboration Module, giving customers a high degree of control over how (and with whom) their project data is shared, as well as the unique ability to see all changes from version to version.
- The Model Coordination Module, providing automated 3D clash detection capabilities and integrated coordination issue management tools.
- Cloud viewing, markup, and issue-tracking tools allow stakeholders outside of the design software to stay up-to-date and provide feedback.

Connecting project teams across disciplines and design tools on a single platform throughout the life of the project will reduce rework, improve communication, and drive better outcomes at a faster pace.

## CAN THIS NEW WAY ADDRESS CONCERNS?

For better access for project stakeholders, regardless of location or role, BIM Collaborate Pro allows users to:

- Extend collaboration to project teams in any location, while centralizing efforts of distributed teams.
- Better allocate resources so the best team members with the most relevant skill sets to

each project can be assigned—regardless of location.

For security, BIM Collaborate Pro provides considerable flexibility in controlling who has access to design data by:

- Restricting user access to certain folders with six available project-wide and folder-specific permission levels.
- Limiting access according to user, role, or company.
- Controlling work-sharing and design-deliverable exchange with the assurance that the right information is in the right hands throughout the project.

For accountability and ensuring that everyone involved on the project is competing their tasks in a timely manner, BIM Collaborate Pro's issue tracking and management tools allows for users to:

- Put context around issue resolution with the ability to pin an issue to any 2D or 3D design location.
- Collaborate with comment threads, add photos, assign work and track resolution through inspection.
- Add private or shared markups.
- Create review workflows and track documents through the review process.
- Send transmittals directly from the BIM 360 environment.

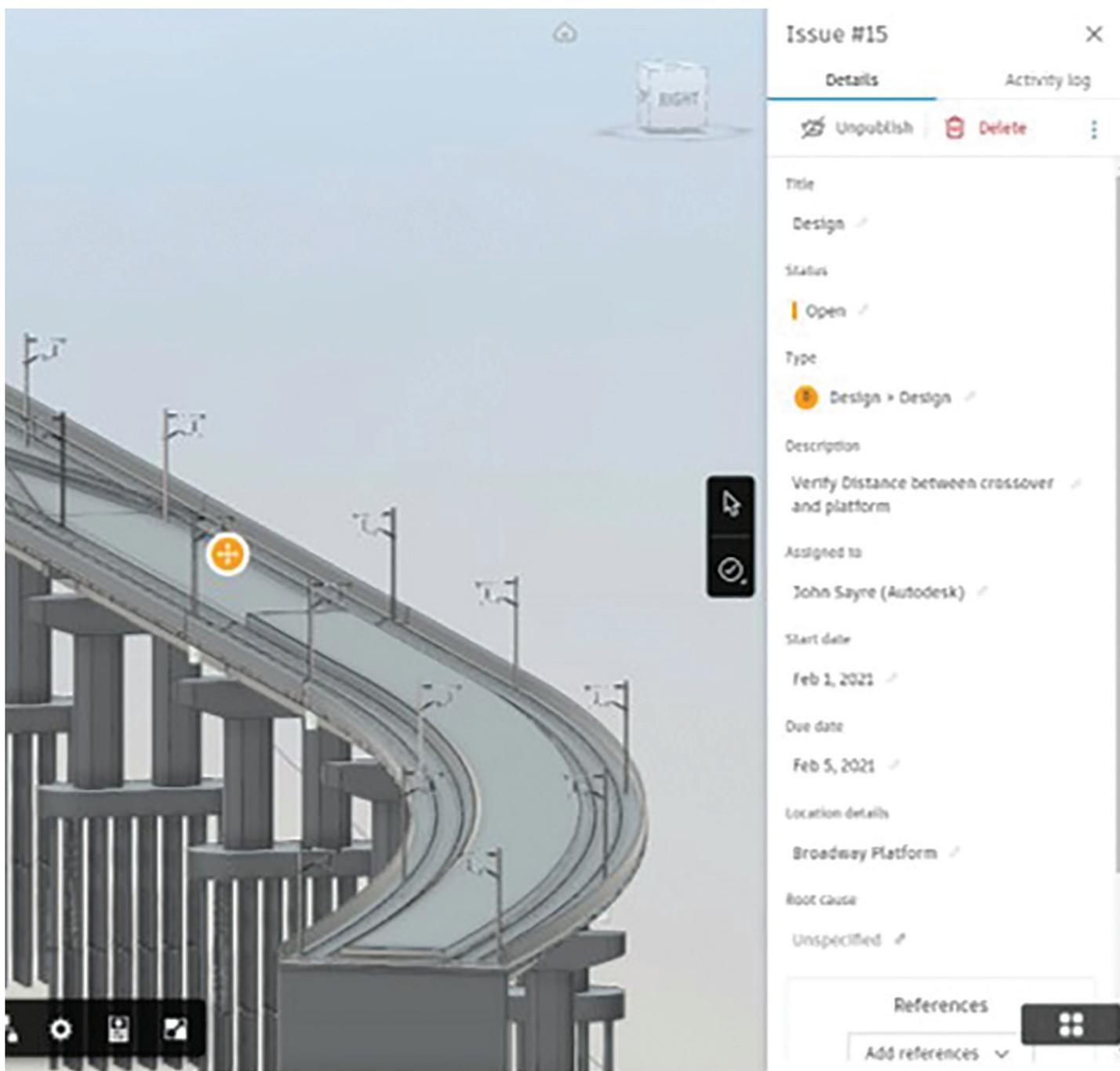


Figure 4

A single source of truth is key to connected workflows. From design to construction, Autodesk's BIM 360 platform connects project teams with a suite of products—all working from centralized project data. With BIM Collaborate Pro extending its tools to Autodesk Civil 3D, horizontal infrastructure collaboration can operate with a much smoother workflow.



*Shawn Herring has been a part of the design engineering community for roughly 15 years in all aspects of design, construction, and software implementations. He has implemented and trained companies across the country on Civil 3D and other infrastructure tools and their best practice workflows. He can be reached at [sherring@prosoftnet.com](mailto:sherring@prosoftnet.com)*

# Setting Up System Variables for Success in AutoCAD

**H**ave you ever started working in a drawing and some commands appear to have stopped working or function in a different way than before? As a design systems admin I help solve problems for users while working on design projects. Many times, the answer comes down to a system variable that has changed. This could have happened by starting a different command, new workflow, or loading an app or lisp file into your project. System variables can be the key to success when understanding and controlling the behavior of these modifiers.

## OVERVIEW

System variables in AutoCAD are values that control command settings, interface behavior, and user options. Some system variables are stored within

the drawing file while others are stored in the Windows registry. In this article you will learn how to redefine important system variables to maximize your efficiency using AutoCAD. After gaining an understanding we will review the System Variable Monitor and System Variable Editor to help us manage and maintain a standard approach to your software workflow.

## ACCESSING THE SYSTEM VARIABLE LIST

There are a couple ways to access the system variable list. At the command prompt type SETVAR and select enter twice. In the text window you will see all the system variables within your session of AutoCAD as shown in Figure 1. Select F2 if the text window does not appear.

```

Command:
SETVAR
Enter variable name or [?]: ?

Enter variable(s) to list <*>:

3DCONVERSIONMODE 1
3DDWFPREC 2
3DSELECTIONMODE 1
ACADLSPASDOC 0
ACADPREFIX
ACADVER
ACTPATH ""
ACTRECORDERSTATE 0
ACTUI 6
AFLAGS 16
ANGBASE 0
ANGDIR 0
    
```

Figure 1: SETVAR dialog box

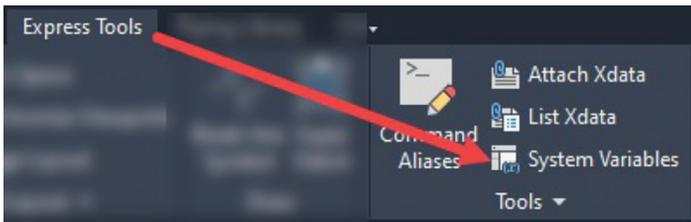


Figure 2: Express Tools

The second and most preferred way is on the express tools tab of the ribbon under the tools panel, select System variables as shown in Figure 2.

A dialog box will appear (Figure 3) giving you a list of system variables where you can go through and change values as well as read up on the actions taken by making changes.

1. Within this window you can type the variable you are looking for.
2. The second area is where you can see if the variable can be change, is read only, and where it is saved in.
3. The third area is where you can gain information about the different settings and how they affect your drawing environment.

### REVIEWING SYSTEM VARIABLES

Although we cannot cover all the system variables in AutoCAD, we will focus on those you can change and that can alter the way you work. We will navigate alphabetically through a list of 20.

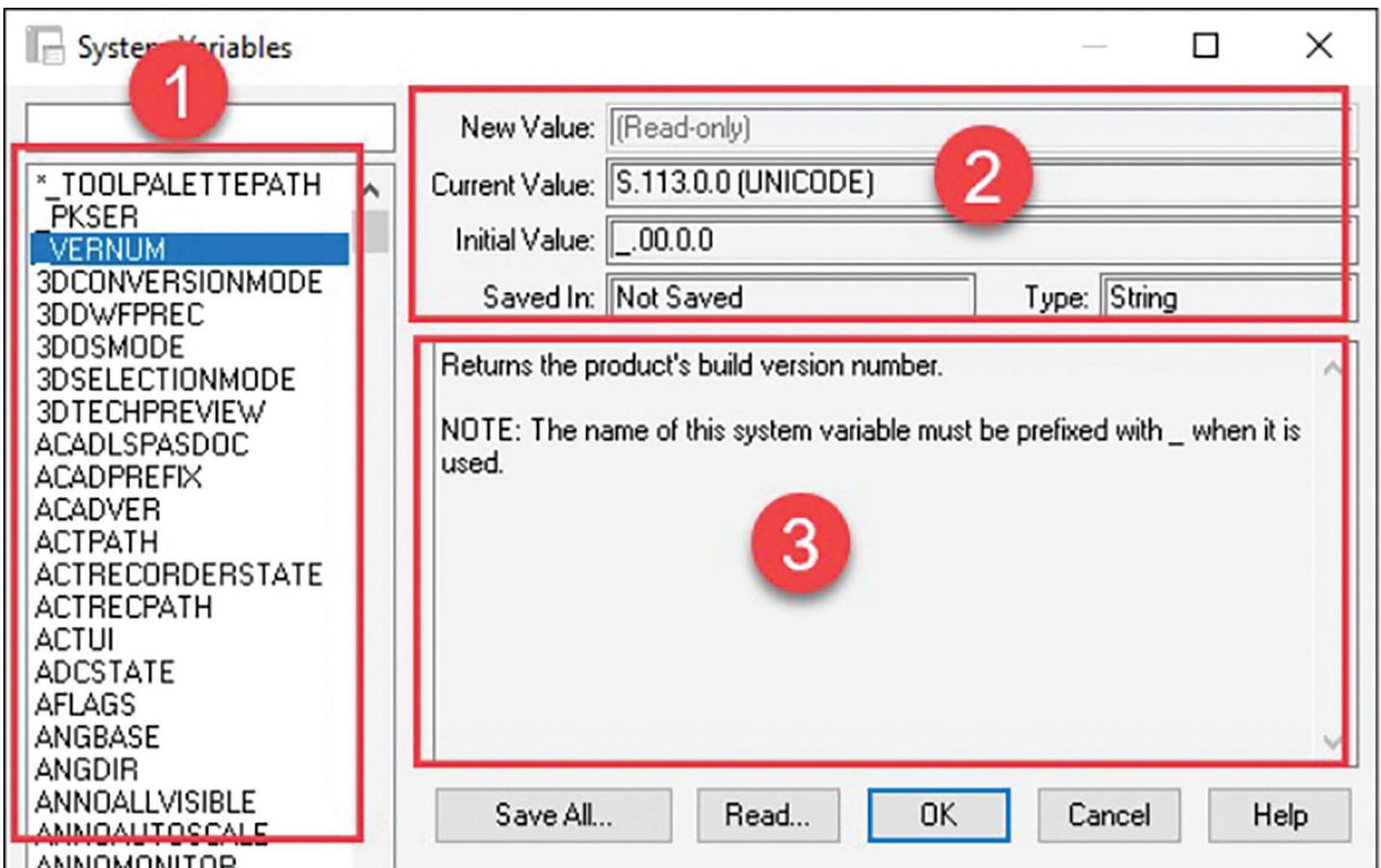


Figure 3: System Variable Dialog Box

## APERTURE

Aperture controls how closely the crosshairs must be to an object before the snap marker appears. You can set this value between 1 and 50 pixels. The default value as shown below is 10.



Figure 4: Control Key

## ATTIPEDIT

This variable controls how attributes are selected within the attribute dialog box. You can also access embedded attributes by holding down the ctrl key then selecting the attribute. This will launch the attipedit command.

## EXPERT

The Expert variable will suppress the operation in question is performed as though you entered y at the prompt. Note: Setting EXPERT can affect scripts, menu macros, AutoLISP, and the command functions. The following settings are taken directly from the knowledgebase article.

0. Issues all prompts normally.
1. Suppresses "About to regen, proceed?" and "Really want to turn the current layer off?"
2. Suppresses the preceding prompts and "Block already defined. Redefine it?" (-BLOCK) and "A drawing with this name already exists. Overwrite it?" (SAVE or WBLOCK).
3. Suppresses the preceding prompts and those issued by the LINETYPE Command prompt (-LINETYPE) if you try to load a linetype that's already loaded or create a new linetype in a file that already defines that linetype.
4. Suppresses the preceding prompts and those issued by UCS Save and VPORTS Save if the name you supply already exists.
5. Suppresses the prompt, "That name is already in Use, redefine it?" issued by the -DIMSTYLE Save option when you supply the name of an existing dimension style.

## DIMMASOC

This variable controls how dimension objects are created. The default value is set to 2 which creates an associate dimension object which are connected to the geometry object. If you set this variable to 0, your dimensions will be exploded and entered as single entities within your drawing as shown in steps 1 and 2 in Figure 5.



Figure 5: Dimensions Exploded

## SELECTIONANNODISPLAY

This variable controls the visibility of annotative objects that are not controlled by the current scale. Turning it off (setting to 0) will eliminate the ghosting effect you can have on drawings as shown in Figure 6.

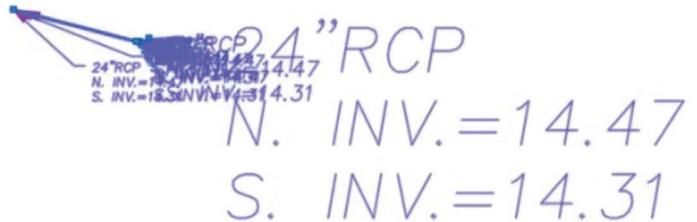


Figure 6: Ghosting Text

## ROLLOVERTIPS

If the ROLLOVERTIPS system variable is set to 1 and you hover your cursor over an object in the drawing area, then a tooltip will appear which will show a small list of the object properties. Make this variable 0 to increase speed when working with large drawings.

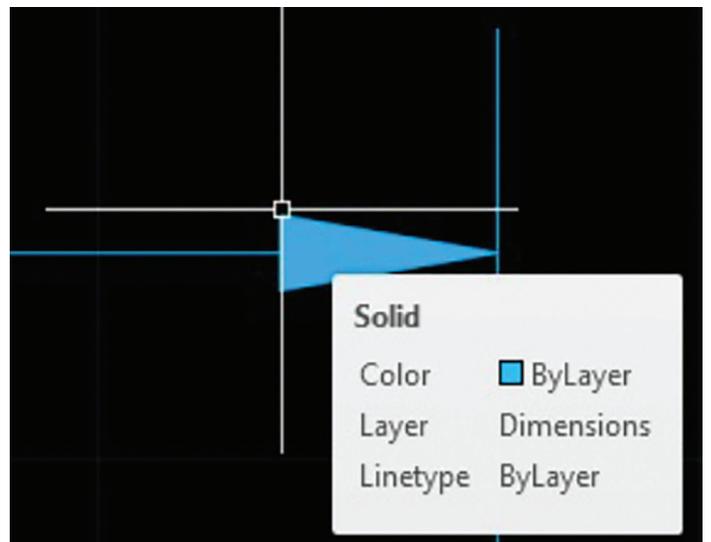


Figure 7: Rollover Tips

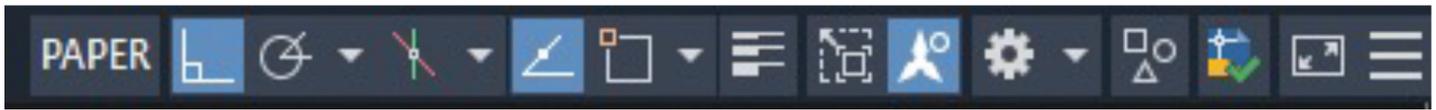


Figure 8: The Statusbar

### REMEMBERFOLDERS

This will remember the folders of the last place you were in while inserting a block. A simple on off switch will control this system variables.

### STATUSBAR

Controls the visibility of the status bar in the lower right of your drawing area as shown in Figure 8. Setting the value to 0 will turn off the status bar.

### PEDITACCEPT

The default value of PEDITACCEPT system variable is set to 0 which allows Polyline Edit command to return a prompt as shown in Figure 9.

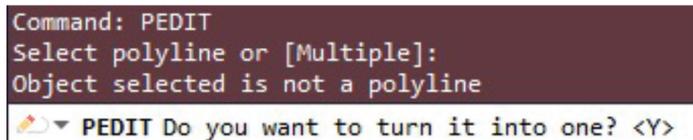


Figure 9: PEDIT command (Y)

If the value of this system variable is changed to 1 then the default value "Y" will be accepted, and this prompt will be suppressed.

### SELECTIONPREVIEW

By default, the value of SELECTIONPREVIEW system variable is set to 3, which allows a preview of the object under selection when you hover your cursor over the object in the drawing. You can change this value to 0 to avoid any object selection preview thereby improving the performance of AutoCAD.

### PALETTEOPAQUE

This system variable controls the transparency of palettes, to improve performance keep the transparency off or set the value of PALETTEOPAQUE system variable to 1. The default value of this system variable is 0.

### HPLAYER

Controls the default layer which hatch patterns are placed on. This can be controlled via the Hatchedit (HE) dialog box as well as shown in Figure 10.

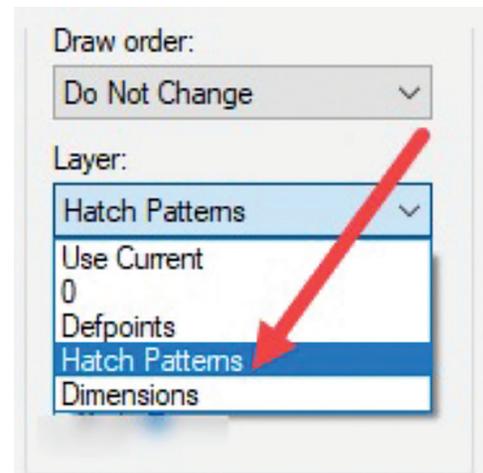


Figure 10: Default Hatch Layer

### CURSORSIZE

Determines the size of the crosshairs as a percentage of the screen size. Valid settings range from 1 to 100 percent. When set to 100, the crosshairs are full-screen, and the ends of the crosshairs are never visible. When less than 100, the ends of the crosshairs may be visible when the cursor is moved to one edge of the screen.

### HIGHLIGHT

This system variable controls whether the selected object will be highlighted or not. The default value of HIGHLIGHT system variable is 1 which allows objects to remain highlighted when selected. You can change this system variable to 0 to stop highlighting objects when selected.

### FILEDIA

This system variable controls whether dialog boxes are suppressed in AutoCAD. Setting this variable to 0 will cause all the commands to be shown on the command line and not via a dialog box (Figure 11). Always, remember to look at the command line as this variable can change with apps and lisp files used in AutoCAD.

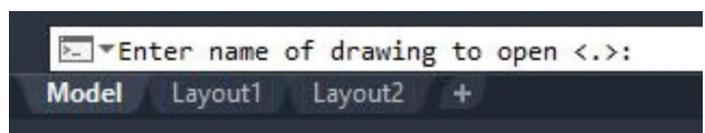


Figure 11: No Dialog Boxes



Figure 12: Layout 1 and 2 Tabs

## MIRRTEXT

This system variable controls how mirror reflects a text object. Setting this variable to 0 will force the text to retain its current direction and not be mirrored along with the objects selected.

## XFADCTRL

Controls the amount of fading within a reference being edited in place. This setting affects only the objects that are not being edited in the reference. Valid values are from 0 to 90.

## LAYOUTTAB

Toggles the visibility of the Model and Layout tabs. When this is set to 0; Model and layout tabs are hidden. Setting to 1 will display Model and layout tabs as shown in Figure 12

## STARTMODE

Start mode will determine whether you want the

start tab to show up or not when you launch AutoCAD. Some more experienced users turn this off but don't do so right away. There is a lot of great information on the start tab including recent files and learning content. See Figure 13 for a list of great information that can be provided from the start tab.

1. Recent Drawing files.
2. Autodesk Docs – Direct connection to BIM360
3. Learning Material
4. My Insights
5. Online Help Menus
6. Announcements (Have you tried series).
7. Send feedback to Autodesk

## SYSTEM VARIABLE MONITOR

The System Variable Monitor is designed to contain a list of AutoCAD system variables and provide access to view and change the default values as needed. You can access the system variable monitor by typing SYSVARMONITOR at the command prompt or right clicking on the status bar as shown in Figure 14 and select Configure System Variable Monitor.

Click on the “Edit List” button within the main window and

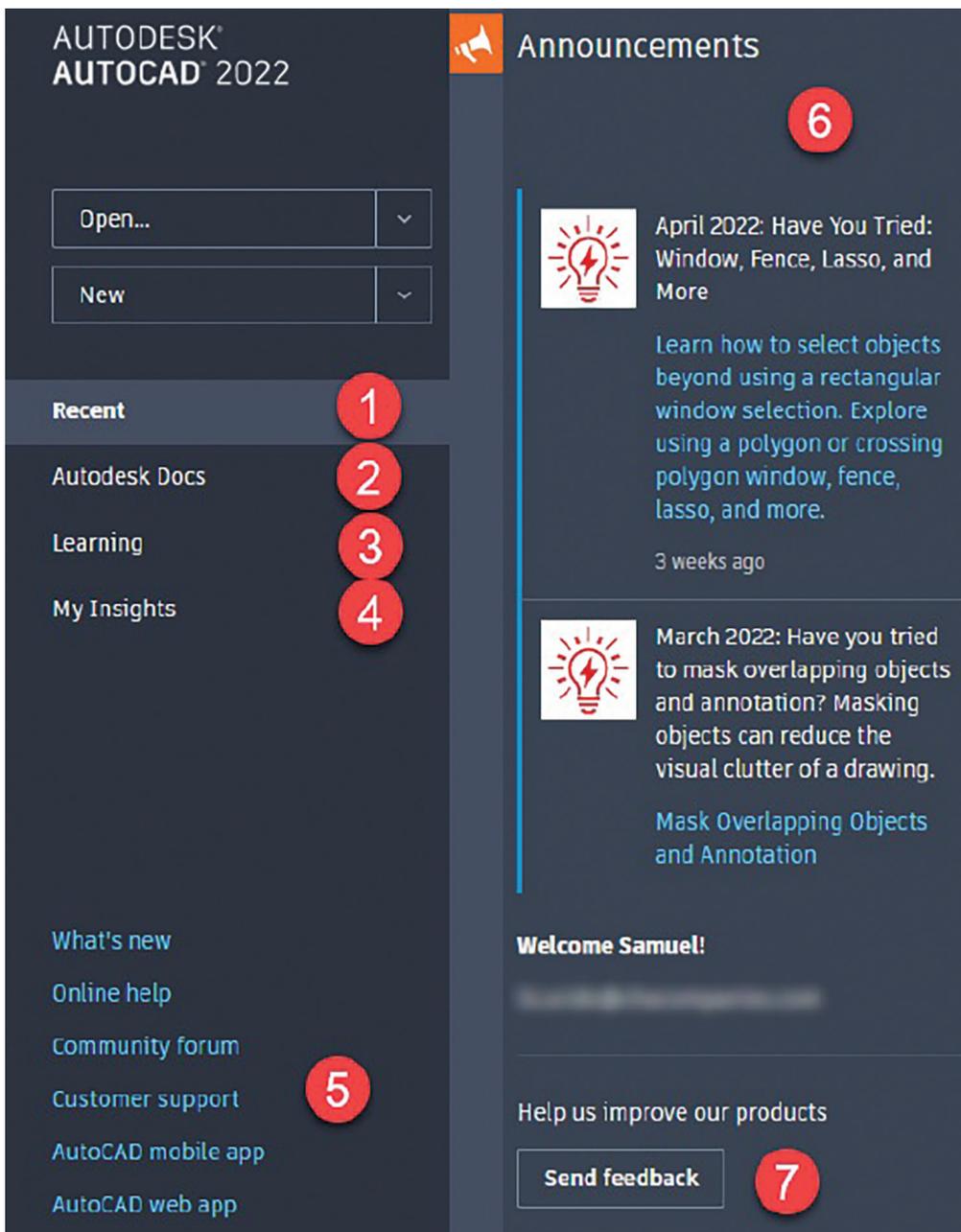


Figure 13: The Start Tab

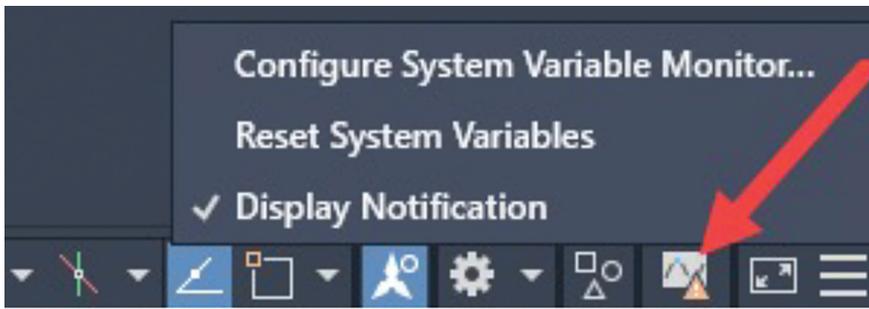


Figure 14: System Variable Monitor Status Bar

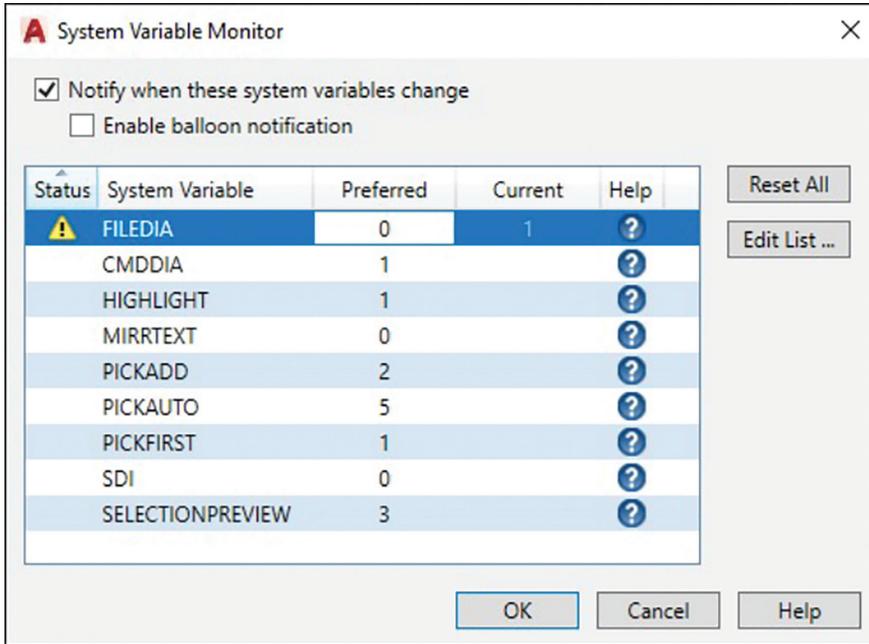


Figure 15: System Variable Monitor Dialog Box

a new dialog will open (Figure 15). Scroll through the available system variables in the left windowpane or begin typing a variable name in the search field.

Select the variable then click on the right arrow to move them to the monitored system variables in the right pane. You can also remove variables by reversing this step. When done click on “OK”

## CONCLUSION

If you want to learn more about system variables and how they can affect your drawings, then look for my class at Autodesk University 2022 named “System Variables Explained” in New Orleans. In this class we will review over 50 system variables that can directly affect the way you work in a negative or positive way. At the time of writing this article the voting will be underway and we will not know if the class was selected or not. Either way we will continue to investigate system variables in AutoCAD and how they can affect your workflow.



Sam Lucido is a Design Systems Administrator for CHA Consulting, Inc. He has over 25 years of experience in engineering design projects, user support, CAD standards and customization. Sam is professionally certified in AutoCAD, Civil 3D, and an Autodesk Expert Elite Member. Sam has been a top-rated Autodesk University Speaker for the past 7 years and created many articles on AutoCAD and Civil 3D through the Autodesk Knowledge Network. He uses his vast knowledge about AutoCAD and Civil 3D to help provide support to engineering and design teams at CHA Consulting, Inc. You can find him at [CADProTips.com](http://CADProTips.com) and he can also be reached at [sam.lucido@cadprotips.com](mailto:sam.lucido@cadprotips.com)

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## ID: WINDOW / CREATE, ADD AND MODIFY WINDOWS

<https://idarqtools.com/index.php/home/idwindow/>

**Autodesk Revit: 2020, 2021, 2022, 2023**

This add-in allows you, through a graphical interface, to create fully configurable parametric windows from more than ten preset types, add them to your project and modify them easily and quickly.

### Main features:

- Simple, fast, and intuitive graphical interface
- 10+ Window Types.
- Imperial and metric units.
- Set frame parameters.
- Set sash and grid parameters.
- Set sill and board parameters.
- Set interior and exterior trim parameters.
- Create custom windows by combining different types of sashes into up to six individual panels.
- Define the type parameters from the graphical interface.
- Assign materials to each part of the window.
- Name of the windows can be defined automatically or custom.
- Windows created with id: window can be modified and edited with the same graphical interface.
- All window families have shared parameters that allow them to be included in schedules.
- Opening line can be shown or hidden.
- Change family to another from the graphical interface.
- Three levels of detail: coarse, medium, and fine.
- Set horizontal cut plane of the custom window that will be shown in the floor plan.



## TAB SELECT+

<https://apps.autodesk.com/RVT/en/Detail/Index?id=7669797856415497092&appLang=en&os=Win64>

**Autodesk Revit: 2023, 2022, 2021, 2020, 2019**

This app will allow you to select the complete MEP network(s) with just one click. It will search and add all elements connected to the selected element(s).

It can be used in all MEP systems, Conduits, Cable Trays, Duct, Flex Duct, Pipe, and Flex Pipe.



## AUTOSAVE (SUBSCRIPTION)

<https://apps.autodesk.com/INVNTOR/en/Detail/Index?id=3908021420381157341&appLang=en&os=Win64>

**Autodesk Inventor: 2023, 2022, 2021, 2020, 2019, 2018**

**Autodesk Inventor Professional: 2023, 2022, 2021, 2020, 2019, 2018**

AutoSave is an add-in that runs in the background of Autodesk® Inventor® and saves the documents to the location you choose at customizable intervals.

Select an interval at which time the program will run a save command for either the current document, all visible documents, or all open documents. These can then be saved to the document's original location or a custom location of your choice.

Choose how many versions you wish to retain or how long you wish to keep the saved versions. You can also choose whether the files get removed during a manual save in order to keep unused files to a minimum.

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